REMARKS

By the present Amendment, claims 7, 11, 12 and 16 are amended. This leaves renumbered claims 7-17 pending in the application, with claim 7 being independent.

Substitute Specification

Submitted herewith is another copy of the marked-up version of the original specification to support the previously filed substitute specification . That substitute specification corrects the objections raised against the original specification.

The marked-up version incorporates the modified sheets into and to replace the pages of the original application. Cross-outs and interlineations indicate changes on the modified sheets. The strikethroughs on the original pages including the claims, show that those original pages are completely deleted.

Acceptance of the substitute specification is again requested.

Provisional Obviousness-type Double Patenting

Claim 1 (presumably intended to be claim 7) is provisionally rejected on the ground of obviousness-type double patenting over claims of co-pending Application Serial No. 09/601,280. This rejection is overcome by the terminal disclaimer submitted herewith.

Rejections Under 35 U.S.C. § 112

Claims 7-17 stand rejected under 35 U.S.C. § 112, first and seconds paragraphs, as being based on an insufficient disclosure and/or indefiniteness on the ground that the recitation in claim

7 of a mushroom-shaped interlocking element having a plate-shaped head is not previously disclosed and is indefinite. These rejections are overcome by changing "plate-shaped heads" to "mushroom-shaped heads", which is adequately disclosed and definite.

Claims 11 and 12 stand rejected under 35 U.S.C. § 112, first and second paragraphs, as being based on an insufficient disclosure and/or indefiniteness on the grounds that the recitations of "loose leno weave" and "flat knit" were not specifically disclosed and/or are indefinite. These rejections are overcome by changing these recitations to refer to "a weave" and "a knit", respectively, which are adequately disclosed and definite.

Claim 16 stands rejected under 35 U.S.C. § 112, first and second paragraphs, on the grounds that "rivited tuft" is not adequately disclosed and is indefinite. This rejection is overcome by changing it to read "tuft", which is adequately disclosed and definite.

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Accordingly, claims 7-17 are allowable. Prompt and favorable action is solicited.

Respectfully submitted,

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Dated: June 18, 2003

40097 Patent Application of AXEL SCHULTE for [MARKED-UP VERSION]

~~MODIFIED SHEET~~

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~~Floor~~ Carpet Installation System

Field of the Invention

The present invention relates to a floor carpet installation system with the useful surface of the carpet being formed by its nap side and with an anchoring means that can be fixed to the floor, the anchoring means having protuberant mushroom-shaped elements having the form of fingers with thickenings at their ends, ~~which come into~~ interlocking engagement with the backside of the carpet formed of a loopless material, opposite the nap side.

~~Summary of the~~ Background of the Invention

A floor carpet installation system ~~of this type~~ is ~~known already from~~ DE 195 32 685 A1. In the ~~known~~ system a ~~so-called~~ mushroom strip is provided as anchoring means to be fastened to the floor, ~~of which~~ upwardly protuberant mushroom-shaped interlocking elements ~~with its end thicknesses~~ with a felt layer, ~~which~~ forms the backside of the carpet to be installed. This type of anchoring of the carpet incorporates certain inadequacies. In particular, this type of anchoring does not form a sufficiently secure connection for the prevention of sliding along the carpet plane. As a result, ~~then formation of~~ buckling and bulges can occur during use, especially with higher stresses, for example by sliding of heavy pieces of furniture, leading to greater danger of damage.

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Summary of the Invention

~~The object~~ The present aim to provide of the invention ~~is to disclose~~ a floor carpet installation system which guarantees a comparably improved anchoring between carpet and floor.

With a floor carpet installation system ~~of the aforementioned type this object~~ according to the present invention ~~is~~ these objects are provided attained ~~in that~~ a micro-adhesive closing member is provided as the anchoring ~~arrangement, in~~ key of the anchor ~~which the~~ thicknesses of the fingers of the interlocking elements have the shape of plate-like heads, ~~which~~ the heads are provided on the top with concave depressions, ~~and that~~ the depressions are provided with an adhesive causing additional connection with the backside of the carpet.

In this manner an especially fixed connection is attained in relation to relative movements along the carpet plane. ~~Owing to the fact that~~ Since longitudinal sliding is definitely prevented, no danger exists of arching or buckling, even with greater stress.

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A micro-adhesive closing member which is particularly suitable for the system according to the present invention ~~is known from~~ is disclosed in DE 196 318 A1. In this case, according to the material make-up of the carpet to be installed, it particularly ~~according to~~ the structure of the carpet backside, a micro-adhesive closing with a thickness of the carrier of the interlocking elements of 0.1 to 0.5 mm and with 20 to 600 interlocking elements per cm^2 can be used.

One method for especially simple manufacture of micro-adhesive closings having interlocking elements with plate-like heads, whereby the heads are provided on their tops with concave depressions, is ~~suggested~~ disclosed in German patent application 198 28 856.5.

The depressions of the heads can be provided with the adhesive, providing an additional connection with the backside of the carpet, for example, by scraping the adhesive on the heads.

Textile materials in the form of felts or fleeces can be provided as the backside of the carpet, ~~or else~~ Also, loose ~~breaker fabric or smooth~~ leno weave or flat knitted blank, stitching as found in non-woven textiles or materials, can be used

A1

~~Hereinafter the invention is to be explained in detail relative to the drawing. In the drawing are to be found:~~

~~Fig. 1 a diagrammatically simplified and broken open cross section through a floor carpet with open nap and loopless backside;~~

~~Fig. 2 a perspective, greatly enlarged view of~~ a microplast-adhesive closing component, ~~whereby a cross~~ with a side elevational view in section of one individual interlocking element ~~is represented~~ greatly enlarged;

Other objects, advantages and salient features of the present invention will become apparent from the following detailed description, which, taken in conjunction with the annexed drawings, discloses a preferred embodiments of the present invention.

Brief Description Of The Drawings

Referring to the drawings which form a part of this disclosure:

Figure 1 is a diagrammatically simplified, side elevational view in section of ~~an apparatus for~~ a floor carpet with an open nap and loopless backside according to ~~a first embodiment of~~ the present invention;

Figure 2 is ~~a top plan view in section of the apparatus taken along line A-A of Figure 1;~~ an enlarged perspective

Figure 3 is a side elevational view in section of an apparatus according to a second embodiment of the present invention; and

Figure 4 is a side elevational view in section of an apparatus for according to a third embodiment of the present invention.

While ~~various~~ an embodiments have been chosen to illustrate the invention, it will be understood by those skilled in the art that various changes and modifications can be made therein without departing from the scope of the invention as defined in the appended claims.

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Fig. 3 ~~a~~ view corresponding to ~~that~~ of Fig. 2, ~~whereby~~ depressions on the tops of the heads of the interlocking elements ~~are~~ provided with adhesive, and

Fig. 4 ~~is~~ a ~~broken open~~ plan view, in almost normal dimensions, of the loopless backside of the carpet of Fig. 1.

Detailed Description of the Invention

Fig. 1 shows an enlarged, diagrammatically simplified representation of a cross section through a floor carpet with nap elements 1 of the traditional ~~sort,~~ extending upward from a connection layer 3, and forming the nap side of the carpet to serve as the useful surface. The backside 5, opposite the nap side, is formed by a material having no loops. For this purpose, materials can ~~be considered which~~ lend the carpet structure a certain degree of rigidity, alignment stability and tear resistance. For this purpose felt or fleece ~~might~~ be ~~considered,~~ which attain their mechanical composition by the tufting method and are glued together with connection layer 3 of the carpet. Loose ~~breaker fabric or smooth right/left stitching~~ and other so-called non-woven materials are also suitable for this purpose.

Fig. 2 shows a section of a strip of a microplast-adhesive closing 7 as disclosed in DE 196 46 318 A1. The thermoplastic strips (which may be, for example, polyolefin or a blend of polyamides) are formed in the gap between a pressing tool and a molding tool and form a foil-like carrier 9 with fingers 11 protruding out of its top. According to the mechanical construction and fineness of the structure of backside 5 of the relevant carpet, the arrangement of fingers 11 has a finger density of approximately 20 to 600 fingers 11 per cm^2, ~~with a~~ thickness of carrier 9 ~~of~~ is

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approximately 0.1 to 0.5 mm. Other finger densities and/or thicknesses of carrier 9 can of course come into consideration according to special circumstances.

As can be seen, especially from the sectional representation shown greatly enlarged in Fig. 2, the thickened heads 13 of fingers 11 are shaped into a mushroom- or plate-shape~~ with~~ concave topside, ~~so that there is~~ forming a depression 15 within the edges of each head 13. S. The real top surfaces are

With the example shown in Fig. 3, depressions 15 of heads 13 are filled with adhesive 17. This adhesive can be applied by spreading on or scraping on, in order to cause an additional composite binding effect, following the interlocking engagement with backside 5 of the relevant carpet. For example an adhesive on acrylate base, for instance 2-ethyl hexyl acrylate or butyl acrylate can be ~~considered~~ used as an adhesive, in various different selected mixture ratios, in order to vary the plasticizing and the plasticity and adhesive power as desired and as required.

With installation of wall-to-wall carpets, adhesive closing component 7 can be provided in the form of long strips or bands. With installation of the carpet in sections, shorter, individual strip segments can be provided in a suitable manner.

(B) →

What is claimed is:

Floor Carpet Installation System

The invention relates to a floor carpet installation system with the useful surface of the carpet being formed by its front side and with an anchoring means that can be fixed to the floor surface, the anchoring means having protuberant interlocking elements which come into interlocking engagement with the backside of the carpet opposite the nap side.

A floor carpet installation system of this type is already known from EP 0 321 978 B1. In the known system, the backside of the carpet includes loop elements projecting outward over the base of the carpet, with hooks of the interlocking means which can be fastened on the floor coming into engagement therewith.

This type of anchoring of the carpet to the floor has certain drawbacks. As has been shown, while raising the carpet from the floor is prevented by the cooperation of the hooks and the free loops found on the carpet backside, this type of anchoring still does not form a sufficiently secure composite action to prevent sliding along the carpet plane. Thus during use this arrangement can lead to the formation of humps and bulges or warping, and can cause buckling of the piece of carpet, and therefore, especially under even higher stresses, for example with the sliding of heavy pieces of furniture, the danger of even greater damage is present.

The object of the invention is to disclose a floor carpet installation system which guarantees a comparably improved anchoring between carpet and floor.

With a floor carpet installation system of the aforementioned type this object according to the

invention is attained in that the backside of the carpet turned toward the anchoring arrangement is formed by a material having no loops and that the anchoring means has a loopless material adhered with the floor surface as well as a micro-adhesive element, which includes interlocking elements on both sides of the anchoring element in the form of fingers with thickenings at the ends which on the one hand interlock with the loopless backside of the carpet and on the other hand interlock with the loopless material on the floor surface.

The anchoring provided according to the invention by means of a double-sided micro-adhesive closing, of which the adhesive closing element has interlocking elements in the form of fingers with thickenings at the ends, which interlock on each side in turn with a loopless material, leads to several advantages. On the one hand the interlocking with loopless material, whereby the interlocking occurs not by means of loop elements but rather by means of direct engagement of the interlocking elements in the structure of the material, allows for a particularly secure connection relative to movements along the carpet plane, so that in the present state of the art disturbances arising on the basis of sliding of the carpet are avoided. On the other hand, in view of the fact that the adhesive closing element is not directly adhered with the floor surface but rather is interlocked with a likewise loopless material which is fastened on the floor surface, the danger is avoided that shrinkage or warping occurring with hardening or aging processes of the floor finish could lead to detachment of the anchoring, because the loopless material found on the floor surface forms a compensation layer with a certain flexibility. Also, this layer fastened to the floor surface allows for footstep-sound-absorbing.

One particular additional advantage resides in that by selection of the dimensions, the geometry and/or selection of the number of interlocking elements per surface unit the interlocking effect on both sides of the adhesive closing element can be selected in a suitable manner. Thus for example the adhesive effect on the bottom of the adhesive closing element turned toward floor

finish can be selected to be stronger than the adhesive effect in relation to the loopless material on the backside of the carpet. With a lifting up of the carpet, which is possible with the interlocking with loopless material on the carpet backside by overcoming the adhesive force, the adhesive closing element in this case remains interlocked with the floor-contacting loopless material, so that after lifting of the carpet a new installation is possible without the complication of further measures.

For the installation system according to the invention a micro-adhesive closing element is suitable, which is configured as the element known from DE 196 46 318 A1, but differs basically therefrom in that not only on the front but also on the backside of the carrier are shaped corresponding interlocking elements.

According to the composition of the material of the carpet to be installed, in other words according to the structure of the backside, a micro-adhesive closing with a strength and density of the carrier of the interlocking elements of 0.1 to 0.5 mm and with 20 to 600 interlocking elements per cm^2 on each side can be used.

The thickened ends of the fingers of the interlocking elements could have the shape of mushroom heads or plate-like heads, whereby the tops of the heads are preferably provided with concave depressions. One method for especially simple manufacture of micro-adhesive closing elements with such interlocking elements is suggested in German patent application 198 28 856.5.

With use of interlocking elements having depressions on the tops of the heads, the depressions of the heads can be provided with an adhesive providing an additional connection with the backside of the carpet and/or the floor-side material, for example by scraping onto the heads.

Textile materials in the form of felts or fleeces or else loose breaker fabric or smooth stitching as found in non-woven materials can be provided as backside of the carpet and as loopless material adhered with the floor.

Hereinafter the invention is to be explained in detail relative tot he drawing. In the drawing are to be found :

Fig. 1 a diagrammatically simplified and broken open cross section through the components of the floor carpet installation system;

Fig. 2 a perspective, greatly enlarged view of a double-sided microplast-adhesive closing component, whereby a cross section of one individual interlocking element is represented greatly enlarged;

Fig. 3 a broken open plan view in almost normal dimensions of the loopless backside of the carpet of Fig. 1.

Fig. 1 shows an enlarged, diagrammatically simplified representation of a cross section through a floor carpet with nap elements 1 of the traditional sort, extending upward from a connection layer 3 and forming the nap side of the carpet to serve as the useful surface. The backside 5 opposite the nap side is formed by a material having no loops. For this purpose materials can be considered which lend the carpet structure a certain degree of rigidity, alignment stability and tear resistance. For this purpose felt or fleece might be considered, which attain their mechanical composition by the tufting method and are glued together with connection layer 3 of the carpet. Loose breaker fabric or smooth right/left stitching and other so-called non-woven materials are also suitable for this purpose.

Fig. 2 shows a section of a strip of a microplast-adhesive closing 7 similar to that disclosed in DE 196 46 318 A1. The thermoplastic strips (which may be for example polyolefin or a blend of

polyamides) are formed in the gap between a top and a bottom shaping tool and form a foil-like carrier 9 with fingers 11 protruding out of its top and bottom. Fingers 11 protruding from the top of carrier 9, of which the thickened ends form mushroom- or plate-like heads 13, come into interlocking engagement with the loopless material of backside 5 of carpet 5, and actually by direct engagement in the structure, as is shown in cross section in Fig. 3 in plan view. According to the mechanical construction and fineness of the structure of backside 5 of the relevant carpet, the arrangement of fingers 11 has a finger density of approximately 20 to 600 fingers 11 per cm^2, with a thickness of carrier 9 of approximately 0.1 to 0.5 mm. Other finger densities and/or thicknesses of carrier 9 can of course come into consideration according to special circumstances.

Fingers 11 protruding from the bottom of carrier 9, of which the ends are formed into heads 13, as is also the case with fingers 11 on the top, come into corresponding engagement with a loopless material 21, which is connected through an adhesive layer 23 with the floor finish 25, whereby the interlocking of heads 13 occurs again by direct engagement in the structure of the loopless material 21. The floor-side loopless material may be a similar textile material to that of backside 5 of the carpet, and may be a so-called non-woven textile material, in other words a fibrous compound material with mechanically or physically-chemically reinforced structure, whereupon above all the different fleece and synthetic products, including felt, are included. An acrylate adhesive on hot-melt-base can be provided as adhesive layer 23. The loopless material 21, with shrinkage or aging processes, serves as a compensation element relative to dimensional variations, so that no disturbances occur on the double-sided adhesive closing element 7, especially with suitable selection of material, and it also works in terms of footstep-sound-absorbing.

As has already been discussed, a different configuration of the heads 13 at top and bottom of the adhesive closing element 7 makes it possible that the adhesive effect is different on the top and

bottom. With stronger adhesive effect on the bottom , lifting of the carpet is possible without lifting the adhesive closing element 7 from the floor-side material 21, which facilitates a renewal of installation of the carpet on the adhesive closing element 7 which remains.

With installation of wall-to-wall carpets, adhesive closing elements 7 can be provided in the form of long strips or bands. With installation of the carpet in sections, shorter, individual strip segments can be provided in a suitable manner.

As is particularly clear with study of the greatly enlarged cross section representation of Fig. 2, the thickened heads 13 of fingers 11 of adhesive closing element 7 are formed into a mushroom- or plate-shape with concave vaulted tops, so that within the edges of heads 13 can appear a depression 15.

Depression 15 of head 13 can, as shown in the example, be filled with an adhesive 17. This can be applied by spreading on or scraping on, in order to cause an additional connection following the interlocking engagement with backside 5 of the relevant carpet and/or with bottom material 21. Adhesives based on acrylate can be considered as adhesive, for example 2-ethyl hexyl acrylate or butyl acrylate, preferably in various selected mixture ratios, in order to vary the plasticizing, plasticity and adhesive strength as desired and required. The filling of depressions 15 with adhesive can be provided on both or only on one of the sides of the adhesive closing element 7.

Patent Claims

1. Floor carpet installation system with a carpet forming the useful surface with its nap side (1) and an anchoring means (7) which can be fastened to the floor surface (25), which includes protruding interlocking elements (11), which come into interlocking engagement with the backside (5) of the carpet opposite the nap side (1), characterized in that the backside (5) of the carpet which is facing the anchoring means is formed by a material having no loops and that the anchoring means has a loopless material (21) adhered with the floor surface (25) as well as a micro-adhesive closing element (7), which on both sides has interlocking elements in the form of fingers (11) with thickenings (13) at their ends, which on the one hand interlock with the loopless backside (5) of the carpet and on the other hand interlock with the loopless material (21) on the floor surface (25).
2. Floor carpet installation system as in Claim 1, characterized in that the interlocking elements (11, 13) on both sides of the adhesive closing element (7) include different shapes and/or dimensions and/or alternative spacing.
3. Floor carpet installation system as in Claim 1 or 2, characterized in that the thicknesses of the fingers (11) of the interlocking elements have the shape of mushroom heads or plate-shaped heads (13).
4. Floor carpet installation system as in Claim 3, characterized in that the heads (13) forming the thicknesses are provided on their top sides with concave depressions (15).
5. Floor carpet installation system as in Claim 4, characterized in that the depressions (15) of the heads (13) are provided on at least one side of the adhesive closing element (7) with an adhesive (17) providing an additional connection with the backside (5) of the carpet and/or the material (21) on the floor surface (25).
6. Floor carpet installation system as in Claim 5, characterized in that an adhesive (17) is provided on acrylate base.

7. Floor carpet installation system as in one of the Claims 1 to 6, characterized in that felt or fleece is provided as textile material having no loops of the backside (5) of the carpet.

8. Floor carpet installation system as in one of the Claims 1 to 6, characterized in that loose breaker fabric or smooth stitches are provided as loopless textile materials of the backside (5, 21) of the carpet.

9. Floor carpet installation system as in one of the Claims 1 to 6, characterized in that non-woven textiles such as synthetic materials, needle felt or needle nap are provided as loopless textile material of the backside (5, 21) of the carpet.

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Patent Claims

1. Floor carpet installation system with a carpet forming the useful surface with its nap side (1) and an anchoring means (7) which can be fastened to the floor, which includes upwardly protruding, mushroom-like interlocking elements (9), which have the form of fingers (11) with thicknesses at their ends, which come into interlocking engagement with the backside (5) of the carpet formed of a loopless material, opposite the nap side (1), characterized in that a micro-adhesive closing (7) is provided as anchoring means, in which the thicknesses of the fingers (11) of the interlocking elements have the shape of plate-like heads (13), which are provided with concave depressions (15) on their tops, and that the depressions (15) are provided with an adhesive (17) providing an addition connection with the backside (5) of the carpet.

2. Floor carpet installation system as in Claim 1, characterized in that an adhesive (17) on an acrylate base is provided.

3. Floor carpet installation system as in one of the Claims 1 or 2, characterized in that felt or fleece is provided as the loopless textile material of the backside (5) of the carpet.

4. Floor carpet installation system as in Claim 1 or 2, characterized in that loose ~~breaker~~ fabric or smooth stitches are provided as loopless textile materials of the backside (5) of the carpet.

5. Floor carpet installation system as in Claim 1 or 2, characterized in that non-woven textiles such as synthetic materials, needle felt or ~~needle nap~~ are provided as loopless textile material of the backside (5) of the carpet.

6. Floor carpet installation system as in one of the Claims 1 to 5, characterized in that the backside of the micro-adhesive closing (7) opposite the interlocking means (11) can be connected with the floor by application of adhesive.

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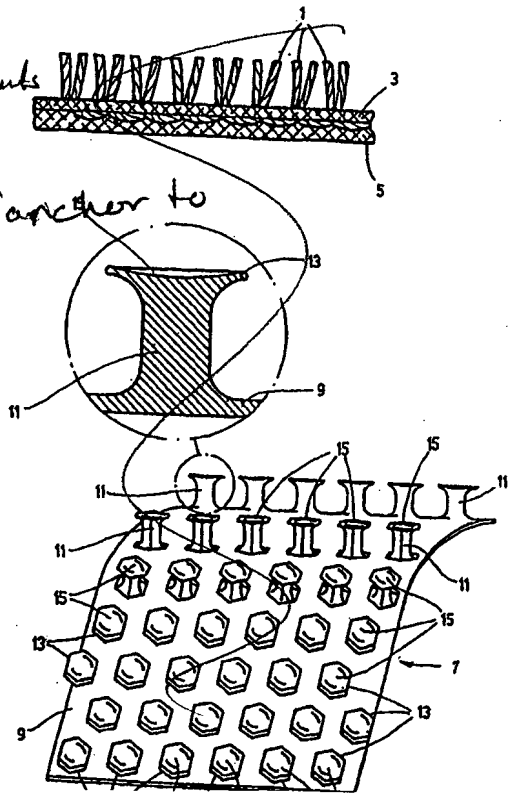
Veröffentlicht
Mit internationalem Recherchenbericht.

~~(54) Title:~~ FLOOR CARPET INSTALLING SYSTEM

~~(54) Bezeichnung: BODENTEPPICH-VERLEGESYSTEM~~

~~(57)~~ **Abstract** of the disclosure

~~The invention relates to~~ A system for installing floor carpets, ~~comprising~~ includes a carpet whose nap side ~~(1)~~ forms the useful surface ~~and~~ anchoring ~~means (7) that~~ can be fixed to the floor, ~~said means having~~ and protuberant interlocking elements ~~means (11)~~ that interlock with the backside ~~(5)~~ of the carpet opposite the nap side. ~~According to the invention,~~ the backside ~~(5)~~ of the carpet facing the anchoring ~~means~~ is formed by a material having no loops, ~~and~~ A micro–adhesive closure ~~(7)~~ with interlocking elements in the form of fingers ~~(11) that have~~ thickenings ~~(13)~~ on the end ~~side~~ is provided as ~~interlocking means, which~~ interlock with the loopless backside ~~(5)~~ of the carpet.



~~(57) Zusammenfassung~~

Bei einem Bodenteppich–Verlegesystem mit einem mit seiner Florseite (1) die Nutzfläche bildenden Teppich und einem am Bodem befestigbaren Verankerungsmittel (7), das nach oben vorstehende Verhakungselemente (11) besitzt, die mit der der Florseite abgewandten Rückseite (5) des Teppichs in Verhakungseingriff kommen, ist die dem Verankerungsmittel zugewandte Rückseite (5) des Teppichs durch ein schlaufenloses Material gebildet, und als Verankerungsmittel ist ein Mikro–Haftverschluß (7) mit Verhakungselementen in Form von Stengeln (11) mit endseitigen Verdickungen (13) vorgesehen, die mit der schlaufenlosen Rückseite (5) des Teppichs verhaken.